

**R E M A R K S**

Claims 1-8 and 11 are pending and stand ready for further action on the merits. Claim 1 has been amended to clarify the scope of the olefin-based thermoplastic elastomer component (C). No new matter has been added by way of the above amendment.

**Interview**

Applicants note with appreciation that the Examiner conducted a personal Interview on July 13, 2004. The Examiner was very helpful in clarifying the issues.

On the Interview Summary Form, the Examiner summarized the Interview as follows:

The Imai et al. reference was discussed along with proposals to the claims. It was agreed that the styrene-butadiene block copolymers set forth in the present claims were not taught or suggested by the reference. It was also agreed that the Applicant would present arguments and/or case law that the EPDM components of Composition VIII and the polymers of column 12, lines 19-21 are directed to different component. It was agreed that Example 30 falls within Composition VIII, and that the Examiner's previous modification of Composition VIII was based on Composition I, which combination Applicants believe was improper.

Further details of the Interview are given below.

[I] Imai et al - US Patent 5,216,074

Claims 1-6 and 11 remain rejected under 35 U.S.C. §102(b) as anticipated by, or in the alternative, under 35 U.S.C. §103(a) as obvious over Imai et al. Applicants respectfully traverse the rejection.

The present invention is drawn to a thermoplastic elastomer composition comprising the following components (A), (B) and (C):

(A) 100 parts by weight of a thermoplastic polyester elastomer;

(B) 3 to 100 parts by weight of a modified olefin resin having an epoxy group or a derivative group thereof in its molecule; and

(C) 10 to 900 parts by weight of a rubbery elastomer selected from the group consisting of an olefin-based thermoplastic elastomers and styrene-based thermoplastic elastomers; wherein the component (C) is not vulcanized; wherein said olefin-based thermoplastic elastomer component (C) consists essentially of at least one copolymer consisting of ethylene-propylene copolymer, ethylene-butene copolymer or ethylene-octene copolymer; and wherein said styrene-based thermoplastic elastomer component (C) is at least one selected from the group consisting of styrene-butadiene block copolymer, styrene-isoprene block copolymer, hydrogenated

styrene-butadiene block copolymer, and hydrogenated styrene-isoprene block copolymer.

This particular set of components gives the composition advantageous properties which allow it to be used as a material for various molding products having excellent scratch resistance on the surface, flexibility, heat resistance, oil resistance, properties at low temperatures, weatherability, strength and fabrication properties.

We now turn to the disclosure of Imai et al.

The cited reference, Imai et al, is directed to a thermoplastic elastomer composition comprising (i) a hydrogenated diene polymer and (ii) a thermoplastic resin or a rubbery polymer. Imai et al disclose several different elastomer compositions labeled as Composition (I)-(VIII).

[I - A] Component (i) Hydrogenated Diene Polymer of Imai et al.

In the Final Office Action dated October 15, 2003, the Examiner noted col. 3, lines 40-57 of Imai et al. The disclosure of Imai et al. at this portion is directed to Component (i) or (i'). In response, Applicants argued essentially that Imai et al. teach away from the use of a styrene-based thermoplastic elastomer component (C) which is

at least one selected from the group consisting of styrene-butadiene block copolymer, styrene-isoprene block copolymer, hydrogenated styrene-butadiene block copolymer, and hydrogenated styrene-isoprene block copolymer.

As the Examiner indicated on the Interview Summary Form, Applicants' arguments are persuasive with respect to the fact Imai et al. teach away from the use of a styrene-based thermoplastic elastomer component (C) as presently claimed.

As recited in claim 1 and col. 1, line 52 to col. 2, line 9 of Imai et al., Component (i) is a hydrogenated diene polymer, which is a hydrogenation product of a straight or branched chain block copolymer consisting of (C) a polybutadiene block segment and (D) a block segment, which is a polybutadiene or an alkenyl aromatic compound-butadiene copolymer and being represented by the formula,  $C-(D-C)_n$  or  $(C-D)_m-X$  in which n

means an integer of 1 or more and m means an integer of 2 or more, wherein at least 90% of the double bond in the butadiene portion of the straight or branched chain block copolymer having been hydrogenated.

Applicants believe it is suggested or implied that the alkenyl aromatic compound-butadiene copolymer of Component (D) substantially has no styrene block and is a *random copolymer* with butadiene. At col. 3, lines 50-57, it is disclosed that the amount of the alkenyl aromatic compound used is not more than 35% by weight, preferably not more than 30% by weight, more preferably not more than 25% by weight based on the total weight of the monomers constituting Block D, and that when the amount is more than 35% by weight, the glass transition temperature of Block D gets higher and Component (i) or (i') has poor dynamic properties.

According to "Polymer Handbook (1966)" written by J. Brandrup and E.H. Immergut and published by John Wiley & Sons, Inc., the Tg of polybutadiene is from 165 to 269K, whereas the Tg of polystyrene is 373K, i.e., higher than the Tg of polybutadiene by 100°C or more (pages III-71 and III-73).

Taking this into account, Applicants believe it is suggested or implied that the alkenyl aromatic compound-butadiene copolymer of Component (D) substantially has no

styrene block(s) and is a **random copolymer** with butadiene. On the contrary, the styrene-based thermoplastic elastomer serving as component (C) of the present invention is a styrene-based elastomer having styrene **block(s)** such as styrene-butadiene **block** copolymer, styrene-isoprene **block** copolymer, and hydrogenated **block** copolymers thereof. Thus, this should be regarded as being completely different from Component (i) of Imai et al.

In fact, only Comparative Examples 4, 6, 7, 9, 10, 12, 13, 18 and 19 of Imai et al. use styrene-based thermoplastic elastomers that correspond to component (C) of the present invention, where the objective performances as Component (i) could not be attained. Further, among these comparative examples, only Comparative Example 19 used an olefin-epoxy copolymer in combination, and no example used a thermoplastic polyester elastomer in combination. Moreover, according to Imai et al., compositions using such hydrogenated styrene-butadiene block copolymers have insufficient compression set at high temperatures as disclosed at col. 1, lines 12-51 and col. 22, line 15 to col. 24, line 68. To solve such drawbacks, Imai et al. propose a composition using a specific hydrogenated diene polymer, i.e., a hydrogenated product of a block copolymer consisting of (C) a polybutadiene block and (D) a block segment

which is a polybutadiene or an alkenyl aromatic compound-butadiene copolymer. This block segment (D) would be considered by the skilled artisan as a block of randomly alternating alkenyl aromatic compound monomers and butadiene monomers.

On the contrary, the thermoplastic elastomer composition of the present invention comprises (A) a thermoplastic polyester elastomer, (B) a modified olefin resin having an epoxy group or a derivative thereof in its molecule, and (C) a rubbery elastomer selected from an olefin-based thermoplastic elastomers and styrene-based thermoplastic elastomers. With no need of using the specific hydrogenated diene polymer essentially required in Imai et al. (in place of component (C) of the invention), the composition as claimed according to the present invention sufficiently provides the objective high performances.

Therefore, the thermoplastic elastomer composition of Imai et al. is clearly distinct from the thermoplastic elastomer composition of the present invention.

[I - B] Component (ii) Thermoplastic Resin or Rubbery Polymer of Imai et al.

We now review the patentable distinctions between the embodiments of component (ii) of Imai et al. and the components of the presently claimed composition.

[I - B - i] Imai et al. at Col. 19, line 7 to col. 20, line 26 and

Example 30

The Examiner asserts that the additional rubbery compound contained in the composition disclosed at this portion of Imai et al. can be an olefin based thermoplastic elastomer.

The Examiner further asserts that use of a hydrogenated block copolymer that contains styrene is anticipated by or would have been obvious over the teachings of Imai et al.

At col. 19, line 7 to col. 20, line 26 Imai et al. disclose Elastomer Composition (VIII) comprising, as essential components, (i) or (i') a hydrogenated diene polymer and (ii) a component consisting of (A) an olefin polymer in or to which a carboxylic acid derivative and/or an epoxy derivative has been copolymerized or grafted, or a polymer obtained by bonding, to the olefin polymer, another polymer in a graft or block form, and (B) at least one polymer selected from the group consisting of polyamide polymers and polyester polymers, which may further contain another compound such as rubbery compound. As one of the specific examples of the olefin polymer constituting Component (A), hydrogenated butadiene-styrene copolymer is cited.

Although Component (A) in Elastomer Composition (VIII) may partially overlap with component (B) of the present



invention, Applicants believe the hydrogenated butadiene-styrene copolymer disclosed as one of preferred examples of Component (A) in Elastomer Composition (VIII) is completely distinct from component (B) of the present invention because the latter does not include hydrogenated styrene-butadiene copolymer.

In addition, regarding the rubbery compound which is not essential in Component (ii) of Elastomer Composition (VIII), there is no specific disclosure as can be seen from col. 20, lines 27-31, but it can only be seen that Example 30 uses EPDM.

Thus, Imai et al., which does not give any specific example, provides no suggestion or motivation to use styrene-based thermoplastic elastomer as the optional rubbery compound in Elastomer Composition (VIII).

On the other hand, Example 30 discloses an example of Elastomer Composition (VIII), which comprises: a hydrogenated diene copolymer (i) comprising a polyethylene block and an ethylene-butene copolymer block; EPDM; an olefin polymer having an epoxy derivative in its molecule (component (B) of the present invention); and a thermoplastic polyester elastomer (component (A) of the present invention). However, Component (i) is completely distinct from the styrene-based thermoplastic

elastomer component (C) of the present invention for the reasons set forth above. Therefore, the composition of Example 30 is completely distinct from the composition of the present invention.

[I - B - ii] Imai et al. at Example 30 and US 2002/0177659

In the outstanding Office Action, the Examiner asserts that the olefin based thermoplastic elastomer encompasses the EPDM used in Example 30. However, as mentioned on the Interview Summary Form, **the Examiner agreed** that the above-amendment to claim 1 excludes EPDM from the inventive olefin based thermoplastic elastomer component (C).

We now turn to Example 30 of Imai et al.

Example 30 of Imai et al. is an example of Elastomer Composition (VIII), which comprises: a hydrogenated diene copolymer (i) comprising a polyethylene block and an ethylene-butene copolymer block; EPDM (EP98A); an olefin polymer having an epoxy derivative *in its* molecule (component (B) of the present invention) and a thermoplastic polyester elastomer (component (A) of the present invention).

US 2002/0177659 discloses in paragraph [0048] that EP98A is an ethylene-propylene-S-ethylidene norbornene copolymer rubber.

However, Applicants note that the disclosure at col. 10,

lines 36-61 of Imai et al. clearly differentiates ethylene-propylene rubber and ethylene-propylene-diene rubber as the rubbery polymer for use in Elastomer Composition (I). On the other hand, concerning the additional rubbery compound for use in Elastomer Composition (VIII), there is no specific example as can be seen from col. 20, lines 27-31, but only EPDM (EP98A) as exemplified in Example 30. In other words, the Examiner has taken the position in the outstanding Office Action that it would be obvious to modify Example 30 which is an embodiment of Elastomer Composition (VIII) by replacing the EPDM with other olefin copolymers described in column 12 as being useful in Elastomer Composition (I).

As noted during the Interview, Applicants respectfully disagree that such a modification to Example 30 is obvious. At most, the Examiner has established that it would be "obvious to try" other olefin copolymers in place of the EPDM of Example 30.

The courts have determined that the "obvious to try" standard does not meet the requirements for obviousness under 35 USC 103. *In re Tomlinson*, 150 U.S.P.Q. 623 (C.C.P.A. 1966). In *In re O'Farrell*, 7 U.S.P.Q.2d 1673 (Fed. Cir. 1988), the Federal Circuit gave some examples of what would constitute an "obvious to try" modification based on the prior art noting that "In some cases, what would have been 'obvious to try' would have been to vary all parameters or try

each of numerous possible choices until one possible arrived at a successful result, where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful." (citations omitted).

As can be seen from the disclosure of Imai et al., this reference has set forth eight separate genera, each labeled Elastomer Compositions (I)-(VIII), respectively that include specific compositions having the properties necessary for the purposes set forth by Imai et al. By taking a component of one genus and substituting the component with that taught in another of the genera, the skilled artisan would not have a reasonable expectation that the final composition would have the properties necessary for the purposes set forth by Imai et al. Furthermore, the skilled artisan would not be motivated to pick and choose from the many combinations set forth in all of Elastomer Compositions (I)-(VIII) to obtain the inventive composition.

Accordingly, this embodiment of the present invention cannot be said to be obvious based on the teachings of Imai et al.

[I - B - iii] Imai et al. at Col. 12, line 14-17

At col. 12, lines 1-4 of Imai et al., it is disclosed that when Component (i) or (i') is used as a compatibilizing agent (for different polymers), there are used, as Component (ii), a

thermoplastic resin and a rubbery polymer in combination. Examples of the rubbery polymer disclosed at col. 12, lines 14-21 include ethylene-propylene rubber, ethylene-monoolefin copolymer rubber including ethylene-butene copolymer, and a styrene-butadiene block copolymer.

Further, col. 9, line 54 through col. 10, line 35 disclose a large number of resins as Component (ii) for general Composition (I) and they include thermoplastic polyester elastomer component (A) of the present invention.

However, as can be seen from col. 12, lines 9-13, examples of Component (ii) for Composition (I) at issue where Component (i) is used as a compatibilizing agent merely include several resins and, here, a thermoplastic polyester elastomer (component (A) of the invention) is not enumerated.

Furthermore, as shown in Table 1, there is no example where a thermoplastic polyester elastomer is used, among five examples of Composition (I) (in each of the five examples, Component (ii) is an olefin resin).

From the above, Applicants consider that it should be regarded that a thermoplastic polyester elastomer is not assumed as Component (ii) in the case where Component (i) is used as a compatibilizing agent.

On the contrary, the thermoplastic elastomer composition of

the present invention comprises (A) a thermoplastic polyester elastomer, (B) a modified olefin resin having an epoxy group or a derivative group thereof in its molecule, and (C) a rubbery elastomer selected from the group consisting of an olefin-based thermoplastic elastomers and styrene-based thermoplastic elastomers. The composition of the present invention gives the objective high performances with this combination of the components without using the specific hydrogenated diene copolymer component (i). Further, Component (i) of Imai et al. is completely distinct from the styrene-based thermoplastic elastomer having a styrene block(s) for the reasons set forth above.

Therefore, Applicants believe that it is not disclosed and not obvious to use the olefin- or styrene-based thermoplastic elastomer as claimed in a mixture of an olefin-epoxy copolymer and a polyester elastomer.

In view of the foregoing, withdrawal of the rejection is respectfully requested.

***Allowable Subject Matter***

Applicants note with appreciation that the Examiner has indicated that claims 7 and 8 contain allowable subject matter.

Conclusion

In view of the above amendments and comments, Applicants respectfully submit that the claims are in condition for allowance. A notice to such effect is earnestly solicited.

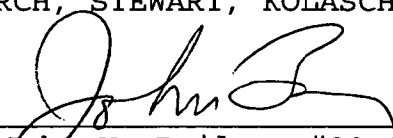
Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact **Garth M. Dahlen, Ph.D., Esq.** (Reg. No. 43,575) at the telephone number of the undersigned below.


If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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